

L

XVI

Sar

141824/P

POPE, J.



Digitized by the Internet Archive
in 2018 with funding from
Wellcome Library

<https://archive.org/details/b30379714>

L xvi Sat

47257

S A R S A P A R I L L A,

By MR. JOHN POPE.

COMMUNICATED

By MR. EARLE.

FROM THE TWELFTH VOLUME OF THE MEDICO-CHIRURGICAL
TRANSACTIONS, PUBLISHED BY THE MEDICAL AND
CHIRURGICAL SOCIETY OF LONDON.

TO WHICH IS ADDED

An Appendix

(NOT INCLUDED IN THE ORIGINAL COMMUNICATION)

ON

CINCHONINE, QUININE,

AND OTHER

NEW VEGETABLE PRINCIPLES.

London ;

PRINTED BY E. BRIDGEWATER, SOUTH MOLTON STREET,

1823.



ON THE COMPARATIVE VIRTUES

OF DIFFERENT KINDS OF

SARSAPARILLA,

By MR. JOHN POPE.

COMMUNICATED

By MR. EARLE.

Read January 14th, 1823.

THE varied success attendant on the use of sarsaparilla, has been owing, no doubt, to the various qualities of the root itself, and the mode adopted for extracting its virtues; and as long as medical men are in theory divided as to what constitute the active properties of this medicine, and the best methods of obtaining them, so long will its efficacy be partial and unsatisfactory.

A desire to rectify some prevalent errors respecting sarsaparilla, and to establish the relative value of the different kinds, has induced me to devote considerable attention to the subject.

The sarsaparilla imported into the London

market is generally distinguished as Lisbon, Honduras and Vera Cruz, those being the ports from which it has usually been shipped.

The Lisbon has always been esteemed the best, and commanded the highest price in the market. It is the produce of the Brazilian settlements of Para and Maranham in South America, and has acquired the name of Lisbon, from being, till within the last few years, only to be procured at that port. Its characteristics are, externally a reddish or dark brown coat; when cut longitudinally, it has a white farinaceous appearance, and is usually more free from chumps and fibre than the other kinds.

The Honduras is brought from the ports on the bay of that name, Balize, and others adjacent; and although it has *not* commanded so good a price as the Lisbon, yet it has, of late years, been held in higher estimation by the medical world, in consequence of its having been brought into notice by some eminent practitioners of the last century. Its characteristics are a dirty brown, sometimes a whitish coat. It is not so red as the Lisbon, is usually more fibrous, and possesses more pith.

The Vera Cruz is mostly brought from that port, and is altogether inferior to the former kinds, being lean, dark, and fibrous. The quantity of it is inconsiderable.

Within the last three or four years, sarsaparilla has been brought from Jamaica, and is generally supposed to be the produce of that island. It differs much from the other kinds in appearance, and still more in the extract it yields. It has a peculiar deep red epidermis, is of somewhat close texture, and when cut longitudinally, that part next the outer coat (which we designate as pith in the other kinds) is found, more or less, to be of a deep red color. It was, some time since, strongly recommended to the medical world by Mr. Richard Battley, whose reputation, as a pharmaceutical chemist, is well known; and who, by a number of very conclusive experiments, satisfactorily established its superiority. He has very obligingly favored me with the results of his experiments, which, for the most part, fully confirm my own observations. He considers it the growth of Jamaica, and has distinguished it by the term *red rete mucosum sarsaparilla*, on account of its deep red color, more particularly of the inner bark.

My own inquiries on the subject lead me to conclude, that it is *not* the growth of that island. As the *red* is not the only kind brought, by way of Jamaica into the London market, some parcels which I have examined are undoubtedly the usual Honduras sarsaparilla.

From the best information I have been able

to collect, I am decidedly of opinion, that the *red* sarsaparilla is the *uncultivated* produce of parts of the Spanish Main, where it is collected by the native or independent Indians, who barter it in exchange for articles of European commerce to the traders who frequent their shore, and by whom it is carried to Jamaica; but the other kinds, more particularly the Lisbon, are probably the *cultivated* produce of the places from whence it is shipped direct to the European market—the great demand for them, being likely to have led to their cultivation, and the pains evidently taken in the trimming, arranging, and packing of the best samples, seems to favor such an opinion.

From a careful and minute examination of all the above kinds of sarsaparilla, it is satisfactorily proved—

That the whole medical efficacy of the plant resides in the *bark*, and consists of pure extractive matter, of which the *best* of each kind yields the largest quantity.

That the root deprived of its cortical part, contains only pith, and tasteless woody fibre, yielding nothing but fecula and a very small proportion of extract either by cold or hot infusion.

That the cortical part of sarsaparilla gives out nearly the whole of its virtues by cold infusion in distilled water—very readily to lime-

water, or water slightly impregnated with caustic alkali—and that all its virtues may be obtained by maceration in distilled water, at a temperature considerably below the boiling point.

That on a comparison of the different kinds of sarsaparilla, the *red*, lately brought from Jamaica, yields by far the largest proportion of extractive matter.

That by submitting the root, cut transversely, to the action of steam or of distilled water, at a temperature somewhat below 180°,*

* I have lately followed up a similar examination of the effect of high temperatures on other vegetable productions, and can confidently state, that the uniform practice of submitting vegetable substances to the action of different menstrua at a high temperature in order to obtain a solution of the medicinal properties, is in most instances decidedly injurious, as not only are the volatile and aromatic properties dissipated, but a large proportion of the active principle is rendered wholly insoluble by its combination with oxygen.

Little, indeed, is at present known of the nature of the chemical changes which heat effects in the proximate principles of vegetable substances; but the changes, which their sensible and medicinal properties undergo, are universally admitted.—Rhubarb, Jalap, and Senna, for instance, lose nearly all their purgative qualities by protracted drying, at a high temperature; and Digitalis, Conium, Solanum Tuberosum, Belladonna, and all the narcotic plants, are rendered comparatively inert even by the heat usually employed in the preparation of Extracts.

In order more fully to investigate this subject, I have constructed an apparatus for the evaporation of Extracts in vacuo (possessing simplicity of construction, and supplying a great deficiency in the ingenious apparatus of Mr. Barry, by providing for an uniform degree of exhaustion, and for regulating the extent of the evaporation) by which the aqueous part of expressed vegetable juices, and the aqueous and spirituous solutions of dried plants are expeditiously evaporated at a temperature from 100° to 150°: the whole product is by this means collected, and an opportunity is

an elegant soluble extract may be obtained, containing all the virtues of the plant, not liable to decomposition, and applicable to the various purposes of extemporaneous prescription.

The following is a brief extract, from numerous experiments, which have led to the foregoing conclusions.

Equal quantities, by weight, of the several sorts of sarsaparilla, by infusion of the split root in distilled water, and the solutions filtered through paper, gave hard extract in the following proportions:—

	By cold infusion.	Subsequently by hot infusion.	Total
Red Jamaica sarsaparilla*	44	20	64
Lisbon fine picked sample	28	14	42
Lisbon, second quality†	22	14	36
Honduras, fine picked sample	30	18	48
Do. second quality†	21	14	26

afforded of examining whatever is driven off by evaporation, or of preserving it if spirit.

On the whole, my observations enable me to state that no vegetable substance (at least none which has been hitherto examined) requires a temperature exceeding 180° for the perfect solution (water being the menstruum) of its medical virtues, or for its subsequent formation into an Extract, even under the ordinary pressure of the atmosphere. (This note was not included in the original communication.)

* Mr Battley's experiments were still more in favour of the *red* in comparison of the other kinds, about 3 to 1. The unusually fine quality of the Lisbon and Honduras which I employed, may, in some measure, explain the difference.

† The second sort employed was of good average quality, such as is usually kept for sale.

Equal quantities of the *cortical* part, and of the *wood* carefully separated, gave, by infusion in boiling distilled water, after filtration, the following proportions of hard extract:—

Bark of the Red Jamaica	-	-	-	100
Wood of do.	-	-	-	20
Bark of the Honduras (the fine sample)	-			48
Wood do.		do.	-	24

The root sliced, bruised, boiled, and expressed in the usual way gave extract as follows:

Red	130	or very little more than obtained by cold infusion	
Lisbon	90	Ditto.	

Honduras	180	{	nearly double the quantity obtained by infusion, but a very tough insoluble extract, containing all the mucilaginous part of the plant, consequently extremely prone to spontaneous decomposition.

From the above few facts thus briefly stated, it is evident, that by the usual mode of treating sarsaparilla, is chiefly obtained a large proportion of inefficacious matter: that the kinds of root usually selected, contain only a small proportion of the active properties of the plant, compared with that lately brought from Jamaica, and which is decidedly the best we are at present acquainted with.

Appendix.

I avail myself of this opportunity to make a few remarks on a subject not indeed immediately connected with the foregoing, but the general interest of which will, I trust, be a sufficient apology ; viz. upon some of the new vegetable principles discovered by the continental Chemists. These discoveries may be regarded as the commencement of a new era in vegetable and pharmaceutical chemistry, from the important results to which they are likely to lead, by enabling the medical practitioner to exhibit, exclusively, the active part of some remedies, and to ascertain with certainty the quantity of active principle contained in any given sample of others.

This has been effected in a remarkable way in the case of the new alkalies discovered in the *Cinchona officinalis*, which have been denominated Cinchonine and Quinine,* in which the

* Cinchonia and Quina would, perhaps, be more analagous to the names of other alkalies, Potassa, Soda, &c, but Quinina and Cinchonina is merely an alteration of the final vowel from the French names by which they are now commonly known; and, as observed by Dr. Elliotson, the latter is certainly less liable to be mistaken for Cinchona in prescription.

entire febrifuge property of Bark has been satisfactorily proved to reside, but more particularly in the latter. Bark has, of late years, been almost discarded from medical practice in this country, from the uncertainty of the precise efficacy of any given dose, and the difficulty of administering it in sufficient quantity; but, by means of these preparations, the dose of the active febrifuge principle of *Cinchona* may now be regulated with the greatest accuracy, and from its extremely small volume, may be increased to any required extent. Some account of the uniform success which has attended the use of Bark under these new forms may be found in "*Formulaire pour la préparation et l'emploi de plusieurs médicaments, par M. F. MAJENDIE;*" and in the "*Formulaire pratique des Hôpitaux civils de Paris.*" A very interesting account also of the successful exhibition of Quinine, in this country, by Dr. ELLIOTSON, may be seen in the 12th Volume of the Transactions of the Medico Chirurgical Society of London.

I have devoted considerable attention to the preparation and chemical properties of some of these principles, particularly those of Bark, Opium and Nux Vomica; and have also made a variety of experiments with some of them, to ascertain their effects on the living subject; and the results, so far as they tend to illustrate

the best mode of exhibiting them, the degree of their solubility, or their doses, may not be altogether uninteresting, as their very recent introduction into this country renders their effects at present comparatively unknown.

With regard to the newly discovered principles of Opium, it is generally known, I presume, to medical practitioners, from the interesting and ingenious investigations of M. ROBIQUET and others, that two distinct principles have been discovered; one possessing, exclusively, the *stimulating*, the other the *sedative* property of Opium; the one designated Narcotine, the other, Morphine. This discovery is likely to prove of the highest importance to medical science, as the combination of these perfectly distinct, and indeed opposite principles, has been the obvious cause of that remarkable uncertainty as to the effects of Opium, and the wide difference of opinion among medical practitioners respecting it, which have, no doubt, operated, in many cases, as a strong objection to its employment. This discovery also explains the nature of all the various nostrum opiates which have been from time to time introduced into practice, the beneficial effects of which have been universally admitted, while the rationale of their action, or the nature of their combinations, have not been understood even by the makers themselves.

I have been induced to repeat many of the experiments, as to the effects of these two separate principles, on animals, with M. Robiquet's preparations, as well as with some of my own, and am fully satisfied with the general accuracy of the results, though I have uniformly been obliged to employ larger doses to obtain the same effects. I would here give a brief account of these experiments; but I have lately had the honor of furnishing specimens of each to a physician of eminence, for the purpose of instituting a minute enquiry into their effects on the human subject, who, I trust, will shortly lay the results before the public.

As these important and active vegetable principles have not yet received the sanction of the College of Physicians, by an introduction of the formulæ for their preparation into the *Pharmacopœia Londonensis*, and as the use of them must therefore unquestionably be much restricted, by a want of confidence in the uniformity and accuracy of their preparation, I am induced to subjoin a brief enumeration of such as I have at present been able to examine; stating such of their chemical properties as may tend, in some degree, to establish the best form for their exhibition, with the doses in which they are usually employed—And should these few practical remarks be considered as deserving the attention of any medical prac-

tioner, I shall be most happy to furnish any further information on these points, to any extent to which I may have been able to carry my investigations.

CINCHONINE, obtained chiefly from the *Cinchona lancifolia*, (though found in all the species of *Cinchona*) has not, I believe, ever been employed medicinally in this country. It has been used by some practitioners on the continent in common with Quinine, but has not been found to possess the febrifuge property in the same degree; and Monsieur Robiquet very recently informed me that from numerous trials he was convinced its febrifuge properties are but comparatively slight; nevertheless, as a tonic, it may probably possess advantages that deserve further investigation. The pure Cinchonine may be given in doses of from 2 to 6 grains, dissolved in water slightly acidulated. It forms salts with acids, in general much more soluble than those of Quinine. The Sulphate of Cinchonine is soluble in water and in alcohol, and the solutions retain, in a remarkable degree, the peculiar flavor of the pale bark. The dose the same as of pure Cinchonine.

QUININE is obtained from the *Cinchona cordifolia* (the *lancifolia* affording it in much less quantity, and the *oblongifolia* being too scarce and expensive to admit of its being em-

ployed). It is now pretty satisfactorily established by experiment, that this alkaline principle constitutes the febrifuge property of bark. It is chiefly used in medicine in combination with sulphuric acid, in the form of a neutral sulphate or sub-sulphate, in which state it is very little soluble in water or in cold alcohol, but a slight excess of acid dissolves it readily. These solutions are intensely bitter, and are characterized by a very peculiar opaline appearance, which distinguishes them from those of Cinchonine. The best form for its exhibition is a solution in distilled water, or some simple medicated water, with one minim of the dilute sulphuric acid of the London Pharmacopœia to each grain of the sulphate; and I have the authority of some eminent practitioners in London, who have been pleased to adopt this mode of exhibition, to state, that a small dose thus given in solution, has been uniformly found to act more speedily and decisively than a larger dose given in substance. The Infusion of Roses is an objectionable vehicle, as it forms a precipitate. The usual dose is from one to six grains twice or thrice a day: M. Chomel de la Charité has even given it to the extent of twenty grains at one dose; but within my own knowledge ten and even eight grains has repeatedly produced nausea and vertigo.

NARCOTINE—the narcotic stimulating property of opium. In its pure state a few grains of it is destructive to animal life. It has not been employed in medicine; but I conceive, if dissolved in oil or æther, it might be beneficially used as a liniment. It is rendered comparatively inert by combination with acids; and it is on this account that the Lancaster black drop, and other solutions of opium in acetic and citric acids, verjuice, &c. have been found less stimulating and more sedative than opium in substance, or than any of the ordinary solutions of it.

MORPHINE, constituting exclusively the anodyne, sedative property of opium, is obtained in small regular crystals, but little soluble in water, except with a slight excess of acid. Narcotine, liquified by heat, forms a gelatinous mass; while Morphine, treated in the same manner, re-crystallizes on cooling. The acetate of Morphine is the combination of this substance, most universally approved;* it is a very deliquescent salt, and may be exhibited in any aqueous fluid, in doses of from one-fourth of a grain to one grain, or formed into a pill with liquorice powder, treacle, &c. I have adopted a very simple method for

* The liquor opii sedativus is chiefly an aqueous solution of acetate of morphine in combination with a portion of extraneous coloring matter, and a little alcohol.

separating these principles of opium for pharmaceutical purposes, by treating it repeatedly with sulphuric æther, and subsequently forming it, by solution in distilled water and evaporation in vacuo, to the consistence of an extract. This preparation, which I distinguish as "*Extract of Morphia*,"* may be uniformly substituted for the ordinary *extractum opii*, and the dose of it considerably augmented, without producing nausea, restlessness, &c.

STRYCHNINE—the new alkaline principle found in all the varieties of Strychnos, the nux vomica nut, the bean of St. Ignatius, &c. It has never, that I am aware of, been employed in this country in the treatment of diseases: one-fourth of a grain is sufficient to kill a good sized dog in eight minutes; and to cats and smaller dogs I have repeatedly seen one-eighth of a grain proving fatal in 15 or 20 minutes. It is the most active of any known vegetable principle: I have even witnessed the sixteenth part of a grain paralyze small dogs in four or five minutes, and kill them in less than half an hour. Its action is peculiar and uniform, invariably first paralyzing the hinder extremities. Like the alkalies above mentioned, it is soluble in water slightly acidu-

* *Extractum opii sine narcotinâ* would be more correct; but the other is more convenient in prescription.

lated. Pills are the only suitable form for its exhibition, on account of its intensely bitter taste, which is decidedly perceivable, even when diluted with 60,000 times its weight of water, or one grain in a gallon.

The resinous extract of *nux vomica* possesses precisely similar properties, and is better suited to the treatment of diseases. The dose is from half a grain to three grains, in pills. The effect of strychnine and the extract of *nux vomica*, on the diseased as compared with the healthy subject, is highly remarkable, and deserves the further investigation of medical men. Three grains of the resinous extract of *nux vomica* rubbed down with a few drops of alcohol, diffused in a little water and injected into the stomach of a dog, or the same quantity given in the form of a pill, uniformly produced death in from 15 to 30 minutes; but three grains injected into the stomach of a similar dog, in which the parvagum had been divided, was much slower in its operation.—I merely state this fact, because it appears somewhat at variance with the opinions entertained by some Physiologists as to its action, and leave the inference to be drawn by others more conversant with the subject.

IODINE.—So much has already been stated respecting the preparation and properties of

this substance, that I should have declined noticing it here, but for the fact, that in the preparation of the saturated tincture (the form in which it is chiefly given) the strength will be found to vary, according to the specific gravity and temperature of the alcohol employed. Alcohol of 835° at 60° dissolves about one-tenth of its weight; alcohol of 815° at 60° about one-sixth, a portion of which is again deposited by keeping. Water only dissolves 1-7000th part of its weight.

The form I have adopted for the preparation of the Tincture of Iodine is 40 grains to one fluid ounce of rectified spirit at 835° in which proportion it will remain suspended at ordinary temperatures: 12 minims contain one grain of Iodine. The usual dose is from 12 to 36 minims twice or thrice a day, diffused in water or any simple fluid, with a little mucilage of gum arabic.

HYDRIODATE OF POTASS is used for the external application of Iodine, by mixing from 20 to 30 grains of it in one ounce of simple cerate.

HYDROCYANIC ACID—Great want of uniformity exists in this very active and highly important remedy, the specific gravity of which varies from 995° to 708°. and this circum-

stance, together with the readiness with which it is decomposed, by the agency of light and atmospheric air, necessarily gives rise to the great difference in its medicinal effects.

The concentrated Hydrocyanic Acid of M. Gay Lussac diluted with six times its bulk of distilled water, constitutes the medicinal acid in use in Paris, and corresponds pretty nearly with that in use in this country, as prepared according to Scheele's process. The dose is from 3 to 6 drops in almond mixture, or diffused in water with a little mucilage of gum arabic. Dr. Elliotson's highly important remarks on the employment of this remedy, published three years ago, render any observations on this subject unnecessary.

96, *Oxford Street.*

THE END.



